AD_____

Award Number: W81XWH-06-1-0391

TITLE: Prairie View A&M/Baylor College of Medicine SMART Summer Undergraduate Prostate Cancer Research Project

PRINCIPAL INVESTIGATOR: Nancy L. Weigel, Ph.D.
B. Gayle Slaughter, Ph.D.

CONTRACTING ORGANIZATION: Baylor College of Medicine
Houston TX 77030

REPORT DATE: April 2008

TYPE OF REPORT: Annual Summary

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
01-04-2008	Annual Summary	15 Mar 07 – 14 Mar 08

4. TITLE AND SUBTITLE
Prairie View A&M/Baylor College of Medicine SMART Summer Undergraduate Prostate Cancer Research Project

5a. CONTRACT NUMBER

5b. GRANT NUMBER
W81XWH-06-1-0391

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Nancy L. Weigel, Ph.D.; B. Gayle Slaughter, Ph.D.

E-Mail: nweigel@bcm.tmc.edu

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Baylor College of Medicine
Houston TX 77030

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT: The goal of this project is to encourage undergraduates to enter careers in prostate cancer research. This project involves BCM faculty presentations at Prairie View A & M University and a 9 week summer prostate cancer research experience at BCM for up to 5 undergraduates/year from PVAMU (4 participated in 2007; 5 or 6 will be recruited for 2007.) Participants attended a weekly research discussion group focused on prostate cancer. Students make PowerPoint presentations on their work at the end of the program. The participants are co-registered in the SMART Program at Baylor College of Medicine (www.bcm.tmc.edu/smart) and have access to elements of the SMART Program including a interdisciplinary seminar series, career development activities and career counseling and the SMART GRE Prep Course. Four students participated in the 2007 program. One student showed that a CYP24 inhibitor potentiated vitamin D mediated growth inhibition, another examined combination treatments in prostate cancer cells, a third studies transition to myofibroblasts, and the fourth studied actions in dendritic cells. Student made multiple presentations . Participants reported significant gains in knowledge and skills .

15. SUBJECT TERMS
Training, African American

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			USAMRMC
U	U	U	UU	7	**19b. TELEPHONE NUMBER** *(include area code)*

Table of Contents

INTRODUCTION: The goal of this project is to encourage undergraduates to enter careers in prostate cancer research through emphasizing the importance of this health problem and generating excitement regarding opportunities to understand the disease and develop effective treatment. This project involves BCM faculty seminar presentations at Prairie View A & M University and a 9 week summer mentored prostate cancer research experience at BCM for 5 undergraduates/year from PVAMU. Students work at the forefront of research, often using high tech equipment, not typically available on undergraduate campuses. Participants attend a weekly research discussion group focused on prostate cancer that will provide opportunities to become better acquainted with prostate cancer researchers from Ph.D. students to faculty. Students make PowerPoint presentations on their work at the end of the program. The participants are co-registered in the SMART Program at Baylor College of Medicine (www.bcm.tmc.edu/smart). They have access to all elements of the SMART Program including a unique interdisciplinary seminar series that included an additional 8 seminars with a cancer focus, career development activities and career counseling. Participants enroll in the SMART GRE Prep Course. Social activities and dormitory housing near the Texas Medical Center facilitate interaction with approximately 70 other participants in the SMART Program who will learn about prostate cancer research from the participants funded by this proposal, amplifying the impact of the project.

BODY: Dr. Gloria RegisFord organized opportunities at PVAMU for BCM faculty to present seminars on prostate cancer. She also organized educational workshops at PVAMU to help recruit participants and extend knowledge of the project beyond the PVAMU students who participate in the SMART Program. Dr. RegisFord has helped promote the program to individual students and provided valuable advice on working with the students. Dr. Weigel and Dr. Slaughter have presented talks and workshops at PVAMU (three times and four times, respectively, since the grant was funded). An African America Ph.D. student presented their prostate cancer research at each of Dr. Weigel's presentation. Drs. Slaughter and Weigel attended the 2007 PVAMU Biology Research Day, bringing to four the number of BCM Ph.D.s who participated in the conference, along with two African American BCM Ph.D. students who are PVAMU alumni. Dr. Slaughter met with PVAMU students on field trips to BCM. Dr. Weigel arranged weekly presentations on prostate cancer for the DOD participants and any other interested SMART Program participants, minority post-baccalaureate participants, Ph.D. students, or post-docs. Typically 6-10 people attended each session. Dr. Weigel identified potential mentors and she and Drs. Slaughter and Weigel matched students with mentors.

In 2007, four PVAMU students participated in the research and educational activities of the SMART Program. They wrote abstracts and presented 20-minute talks on their research for other SMART Program participants and lab members. Three students presented posters at the PVAMU research conference. **Alem Tewoldeberhan won the first prize research award. Participants funded by the DOD have won 1st prize both years since the grant was funded, testimony to the high caliber of participants and training they receive and research they do at BCM.** Participants presented four posters at national meetings. One participant estimates that 100 people attended his presentations, resulting in a spread of information regarding prostate cancer research. He believes, " I think the most important role of people involved in prostate cancer research is to disseminate the information in a simple and non-threatening way to members of their community, especially about the degree that presentation has in positive outcomes to men diagnosed with this disease."

We added two additional faculty to this program. One (Dr. Levitt) is an Assistant Professor in the Urology department with new DOD funding in prostate cancer. The second, Dr. Mims, is an MD, Ph.D. oncologist who performs clinical trials in prostate cancer and does research on polymorphisms in metabolic enzymes and risk for prostate cancer in African Americans. She has already contributed to the program by giving a lecture to the students on what is known about the biochemical basis for increased risk for prostate cancer in African Americans. These additions increased the choices for research experiences.

We expect to recruit five-six PVAMU students for the 2008 program.

KEY RESEARCH ACCOMPLISHMENTS: Bulleted list of key research accomplishments emanating from this training grant.

Alem Tewoldeberhan

in dendritic cells in which anti-SHP-1 shRNA inhibited activity of SHP (src homology region 2 domain-containing phosphatase-1), the serine/threonine kinaes Akt, that promotes cell survival and inhibits apoptosis, was enhanced

expression of SHP increased survival rates of dendritic cells

Johnston Uzor

showed that ketoconazcole (an inhibitor of CYP24) significantly inhibited growth of PC3 (prostate cancer cells) cells

Jerecia Watson

showed that treating LNCaP cells with genestein and 1 alpha, 25-dihydroxyvitamin D3 decreased cell number

other treatments inhibited growth, but did not Potentiation 1 alpha, 25-dihydroxyvitamin D3 action

Mark Williams, II

acquired data to support the hypothesis that human prostate cancer reactive stroma is composed of myofibroblasts that are recruited from circulating hematopoetic progenitors. Cells from xenografts stained positive with antibodies for tenascin and pro collage type 1 and CD34 and negative for smooth muscle alpha actin, the characteristics of cells that are not committed to myofibroblast lineage, but may originate from circulating bone marrow progenitor cells.

REPORTABLE OUTCOMES:

Participants reported the highest two levels of learning from lab experiences and seminars, but it was the combination of activities that resulted in enormous gains overall. Faculty mentors reported that all students benefited from being in the program.

2006 Participants

Elise Copeland completed a BS degree in December, 2006 and obtained a technician position at BCM, with help from Dr. Slaughter and a supportive letter from her mentor Dr. Weigel. Elise is currently supported on a NIH minority supplement to her mentor's grant. She has participated in all of the 2007-2008 activities of BCM's NIH funded SMART PREP post-baccalaureate program to better prepare herself for Ph.D. study. The program provided her with a tutor, which helped her significantly improve her grade in the molecular and cellular biology class.

Theresa Okeyo-owuor is attending prestigious Washington University as a Ph.D. student.

Josiah Onyenekwe completed his BS degree in August, 2007 and is working as a technician while he prepares to take the MCAT and GRE exams and apply for MD/Ph.D. and DO/Ph.D, programs.

2007 Participants

Alem Tewoldeberhan was accepted to the prestigious University of Texas at Southwestern Medical School. He expects to continue research during his medical training and credits the DOD program with providing him experience and encouragement to pursue this path.

Jerecia Watson will complete her undergraduate degree in 2009 and apply to medical school.

Mark Williams, II intends to work as a technician while he improves his MCAT score and applies to medical school. Mark was selected for significant PVAMU leadership responsibilities his senior year of college (Mr. PVAMU). He has a very strong interest in community involvement, now including education regarding prostate cancer,

BCM faculty have participated in **seven seminars and workshops organized by Dr. Gloria RegisFord at PVAMU since the DOD grant was awarded. African American Ph.D. students participated in four of the seminars**. Dr. Slaughter presented a workshop on making the most of undergraduate research experiences and a workshop on preparing for the GRE for students the 2006 and 2007 summer programs at PVAMU, leading to an increase in participants for the 2007 program.

Participants report that they are talking about prostate cancer to from 5-10 family members, friends and classmates about prostate cancer in the first year following their participation in the program. They are encouraging older family members to be screened for signs of prostate cancer. One 2006 participant discussed prostate cancer with relatives in Africa.

Presentations

BCM Presentations

Alem Tewoldeberhan, Indu Ramamndran and Jonathan Levitt, Ph.D. Role of SHP-1 in enhancing dendritic cell-based anti-tumor vaccines for prostate cancer. SMART Program Research Day. July 24, 2007, Houston Texas.

Johnston Uzor and Dolores Lamb, Ph.D. Enhancing Vitamin D Action in Prostate Cancer Cells by Silencing CYP24 Protein. SMART Program Research Day. July 24, 2007, Houston Texas.

Jerecia E. Watson and Nancy Weigel, Ph.D. Combination Therapies for Prostate Cancer. SMART Program Research Day. July 24, 2007, Houston Texas.

Mark A. Williams, II, David Barron and David Rowley, Ph.D. Origin of Myofibroblasts in Human Prostate Cancer Reactive Stroma. SMART Program Research Day. July 24, 2007, Houston Texas.

PVAMU Presentations

Alem Tewoldeberhan, Indu Ramamndran and Jonathan Levitt, Ph.D. Role of SHP-1 in enhancing dendritic cell-based anti-tumor vaccines for prostate cancer. Prairie View A & M University Biology Research Symposium, October 26, 2007, Prairie View, TX. Won top poster award.

Jerecia E. Watson, Michele N. Washington and Nancy Weigel, Ph.D. Enhancing 1.25 dihydroxyvitamin D_3 Action in Prostate Cancer Cells. Prairie View A & M University Biology Research Symposium, October 26, 2007, Prairie View, TX.

Mark A. Williams, II, David Barron and David Rowley, Ph.D. Origin of Myofibroblasts. Prairie View A & M University Biology Research Symposium, October 26, 2007, Prairie View, TX.

National Presentations

Alem Tewoldeberhan, Indu Ramamndran and Jonathan Levitt, Ph.D. Role of SHP-1 in enhancing dendritic cell-based anti-tumor vaccines for prostate cancer. IMPACT Meeting, September 5-8, 2007, Atlanta, GA

Alem Tewoldeberhan, Indu Ramamndran and Jonathan Levitt, Ph.D. Role of SHP-1 in enhancing dendritic cell-based anti-tumor vaccines for prostate cancer. Biomedical Research Conference for Minority Students, November 8, Austin, TX.

Jerecia E. Watson, Michele N. Washington and Nancy Weigel, Ph.D. Enhancing 1.25 dihydroxyvitamin D_3 Action in Prostate Cancer Cells. IMPACT Meeting, September 5-8, 2007, Atlanta, GA

Jerecia E. Watson, Michele N. Washington and Nancy Weigel, Ph.D. Enhancing 1.25 dihydroxyvitamin D_3 Action in Prostate Cancer Cells. Biomedical Research Conference for Minority Students, November 8, Austin, TX.

CONCLUSION:

The award structure presents a challenge in terms of finding five students specifically interested in prostate cancer research from a single campus. We only recruited three participants for the first year of the program. This was, in part, due to the timing of the initial funding. We were unable to begin recruiting of students until substantially after the normal time that students begin to apply to summer programs. However, those three participants had such positive experiences that we recruited five new participants for the 2007 program and a returning 2006 participant. However, two of those participants failed to secure permission to work as permanent residents, but we still increased the number of participants to four undergraduates for the 2007 program.

The four 2007 participants benefited from their exposure to a frontier level research environment and the seminars they attended on prostate cancer. All students gained research skills (primarily in molecular biology) and background that are helping them reach goals for advanced study. One student won a local research award and presented an excellent poster at a national conference. He gained entry into a highly ranked medical school with a strong research focus.

This partnership program has increased the presence of BCM faculty at PVAMU and enhanced the confidence of PVAMU students in interacting with senior faculty from a research intensive environment. Dr. Slaughter has become well known to PVAMU students. Dr. Weigel is becoming better known and the program has featured at least one African American BCM Ph.D. student in a PVAMU seminar series. PVAMU students are more likely to bring friends to the BCM booth at conferences to learn about prostate cancer research and our Initiative for Maximizing Student Diversity that has included more than 130 under-represented Ph.D. and MD/Ph.D. students, nearly 10 of whom have been involved in prostate cancer research. PVAMU students see the incredible success of the IMSD through which minority students have won more than 100 awards, including nearly 40 national fellowships.

The increased ties between PVAMU and BCM were cited in the positive comments for a NIH IRACDA (Institutional Research and Career Development Award) proposal that involves post-doctoral fellows from BCM helping to develop/revise/teach courses at PVAMU and two other minority serving institutions in the Houston area. If the proposal is not funded on the first submission, it will be revised and resubmitted.

REFERENCES

None at this time.